

**CLAIMS**

We claim:

- 1 1. A personal radio service (PRS) device configured to engage in private, short-range  
2 two-way voice communications with other PRS devices in range of the PRS device  
3 comprising:  
4 a GPS receiver disposed in the PRS device; and,  
5 a radio frequency (RF) transceiver configured both to modulate and transmit voice  
6 communications and positioning data received from said GPS receiver, and also to  
7 demodulate voice communications and positioning data received from the other PRS  
8 devices in range of the PRS device.
- 1 2. The PRS device of claim 1, further comprising:  
2 a positioning information processor for processing positioning data received from  
3 said GPS receiver.
- 1 3. The PRS device of claim 1, further comprising an encoder/decoder circuit for  
2 encoding positioning data for transmission by said RF transceiver.
- 1 4. The PRS device of claim 3, further comprising an identification tone generator for  
2 generating identification tones, said encoder encoding said positioning data in said  
3 generated identification tones for transmission by said RF transceiver.

1 5. The PRS device of claim 1, further comprising:  
2 a positioning information processor for processing said positioning data relative to  
3 an absolute location in a map; and,  
4 a visual display for displaying both said map and said processed positioning data  
5 overlain on said map.

1 6. The PRS device of claim 1, further comprising:  
2 a visual display for displaying position information based upon said positioning data.

1 7. The PRS device of claim 6, wherein said displayed position information comprises  
2 a bearing and range of another PRS device with which the PRS device is engaged in  
3 private, short-range, two-way voice communications.

1 8. The PRS device of claim 1, wherein the PRS device is a Citizens Band (CB) radio  
2 services device configured to engage in private, short-range two-way voice  
3 communications with another CB Radio Services device in range of said CB Radio  
4 Services device;

1 9. The PRS device of claim 1, wherein the PRS device is a General Mobile Radio  
2 Services (GMRS) device configured to engage in private, short-range two-way voice  
3 communications with another GMRS device in range of said GMRS device;

4 10. The PRS device of claim 1, wherein the PRS device comprises a Family Radio  
5 Services (FRS) device configured to engage in private, short-range two-way voice  
6 communications with another FRS device in range of said FRS device;

1 11. In a Personal Radio Services (PRS) device, a PRS communications method  
2 comprising the steps of:

3 establishing a private, two-way, short-range voice communications link with at least  
4 one other PRS device;

5 establishing a data link with a positioning data transmitter and receiving positioning  
6 data from said positioning data transmitter;

7 processing said positioning data to determine location-based information associated  
8 with the PRS device; and,

9 displaying said location-based information in the PRS device.

1 12. The method of claim 11, further comprising the steps of:

2 modulating said positioning data onto a carrier signal which can be transmitted over  
3 said private, two-way, short-range voice communications link, and transmitting said  
4 modulated positioning data to said another PRS device;

5 receiving modulated positioning data from said at least one other PRS device over  
6 said private, two-way short-range voice communications link, and demodulating said  
7 received modulated positioning data;

8 processing said demodulated positioning to determine further location-based  
 9 information associated with said at least one other PRS device; and,  
 10 displaying said further location-based information in the PRS device,  
 11 whereby said displaying of said location-based information and said further location-  
 12 based information can indicate a relative position of each PRS device participating in said  
 13 two-way short-range voice communications link.

1 13. The method of claim 12, wherein said modulating step comprises the steps of:  
 2 encoding said positioning data in an identification tone; and,  
 3 modulating said identification tone onto a carrier signal which can be transmitted  
 4 over said private, two-way, short-range voice communications link; and,  
 5 transmitting said modulated positioning data to said another PRS device.

1 14. The method of claim 12, wherein said demodulating step comprises the steps of:  
 2 receiving a modulated identification tone in a carrier signal from said another PRS  
 3 device over said private, two-way short-range voice communications link;  
 4 demodulating said received modulated identification tone; and,  
 5 decoding positioning data in said identification tone.

1 15. The method of claim 1, further comprising the step of:  
 2 encoding said positioning data using a privacy code prior to said transmission, said  
 3 privacy code restricting access to said positioning data by other PRS devices.

16. A machine readable storage having stored thereon a computer program comprising a routine set of instructions for performing the steps of:

establishing a private, two-way, short-range voice communications link with at least one other PRS device;

establishing a data link with a positioning data transmitter and receiving positioning data from said positioning data transmitter;

processing said positioning data to determine location-based information associated with said at least one other PRS device; and,

displaying said location-based information.

17. The machine readable storage of claim 16, further comprising the steps of:

modulating said positioning data onto a carrier signal which can be transmitted over said private, two-way, short-range voice communications link, and transmitting said modulated positioning data to said at least one other PRS device;

receiving modulated positioning data from said at least one other PRS device over said private, two-way short-range voice communications link, and demodulating said received modulated positioning data;

processing said demodulated positioning to determine further location-based information associated with said at least one other PRS device; and,

displaying said further location-based information.

1 18. The machine readable storage of claim 17, wherein said modulating step comprises  
2 the steps of:

3 encoding said positioning data in an identification tone; and,  
4 modulating said identification tone onto a carrier signal which can be transmitted  
5 over said private, two-way, short-range voice communications link; and,  
6 transmitting said modulated positioning data to said at least one other PRS device.

1 19. The machine readable storage of claim 17, wherein said demodulating step  
2 comprises the steps of:

3 receiving a modulated identification tone in a carrier signal from said at least one  
4 other PRS device over said private, two-way short-range voice communications link;  
5 demodulating said received modulated identification tone; and,  
6 decoding positioning data in said identification tone.

1 20. The machine readable storage of claim 16, further comprising the step of:

2 encoding said positioning data using a privacy code prior to said transmission, said  
3 privacy code restricting access to said positioning data by other PRS devices.